

IN THE CLAIMS:

1-5. (Cancelled)

6. (Original) An RF choke used in at least one of a matching circuit and a bias feeding circuit, both circuits being included in an RF amplifier, the RF choke comprising:

a semiconductor substrate where at least one of the matching circuit and the bias feeding circuit is incorporated;

a spiral inductor which is formed on a main surface of the semiconductor substrate;

a via-hole which is formed at a position adjacent to the spiral inductor by applying a metal film on an inside wall of a hole provided through the semiconductor a substrate;

a first wiring metal layer which is formed on a first dielectric layer and equivalently forms a first capacity element between the via-hole; and

a second wiring metal layer which is formed on the first wiring metal layer with a second dielectric layer therebetween, and equivalently forms a second capacity element between the first wiring metal layer,

wherein the via-hole and the second wiring metal layer are electrically connected to be able to hold a static capacity determined by a sum of the first capacity element and the second capacity element,

and wherein one end of the spiral inductor further extends so as to be electrically connected to the first wiring metal layer.

7-9. Cancelled.

1 10. (Original) An RF passive circuit comprising:

2 a semiconductor substrate;

3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;

5 a dielectric layer which is formed on a main surface of the semiconductor
6 substrate so as to cover the metal film; and

7 an inductor which is a spirally-formed metal layer formed on the dielectric layer,
8 which forms a static capacity where one part thereof faces the metal film of the via-hole.

1 11. (Original) An RF choke used in at least one of a matching circuit and a bias
2 feeding circuit, both circuits being included in an RF amplifier, the RF choke comprising:

3 a semiconductor substrate where at least one of the matching circuit and the bias
4 feeding circuit is incorporated;

5 a via-hole which is formed by applying a metal film on an inside wall of a hole
6 provided through the semiconductor substrate;

7 a dielectric layer which is formed on a main surface of the semiconductor
8 substrate so as to cover the metal film; and

9 an inductor which is a spirally-formed metal layer formed on the dielectric layer,
10 which forms a static capacity where one part thereof faces the metal film of the via-hole.

1 12. (Original) An RF passive circuit comprising:

2 a semiconductor substrate;

3 a dielectric layer which is formed on a first main surface of the semiconductor
4 substrate;

5 a via-hole which is formed by applying a metal film on an inside wall of a hole
6 provided through a second main surface of the semiconductor substrate until the hole reaches the
7 dielectric layer; and

8 a metal layer formed on the dielectric layer which holds a static capacity between
9 the metal film of the via-hole and the metal layer.

1 13. (Original) The RF passive circuit of Claim 12, further comprising:

2 a resistance element whose one terminal is electrically connected to the metal
3 layer, and the other terminal to the via-hole.

1 14. (Original) An RF amplifier comprising:

2 a semiconductor substrate;

3 a dielectric layer which is formed on a first main surface of the semiconductor
4 substrate;

5 a via-hole which is formed by applying a metal film on an inside wall of a hole
6 provided through a second main surface of the semiconductor substrate until the hole reaches the
7 dielectric layer;

8 a metal layer formed on the dielectric layer which holds a static capacity between
9 the metal film of the via-hole and the metal layer; and

10 a field effective transistor, mounted on the semiconductor substrate, which has a
11 common gate circuit having a gate terminal electrically connected to the metal layer.

1 15. (Original) An RF amplifier comprising:

2 a semiconductor substrate;

3 a dielectric layer which is formed on a first main surface of the semiconductor
4 substrate;

5 a via-hole which is formed by applying a metal film on an inside wall of a hole
6 provided through a second main surface of the semiconductor substrate until the hole reaches the
7 dielectric layer;

8 a metal layer formed on the dielectric layer which holds a static capacity between
9 the metal film of the via-hole and the metal layer; and

10 a bipolar transistor, mounted on the semiconductor substrate, which has a
11 common base circuit having a base terminal electrically connected to the metal layer.

1 16. (Original) An RF amplifier comprising:

2 a semiconductor substrate;

3 a dielectric layer which is formed on a first main surface of the semiconductor
4 substrate;

5 a via-hole which is formed by applying a metal film on an inside wall of a hole
6 provided through a second main surface of the semiconductor substrate until the hole reaches the
7 dielectric layer;

8 a metal layer formed on the dielectric layer which holds a static capacity between
9 the metal film of the via-hole and the metal layer;

10 a resistance element whose one terminal is electrically connected to the via-hole
11 and the other terminal to the metal layer; and

12 a field effective transistor mounted on the semiconductor substrate whose source
13 terminal is connected to the other terminal of the resistance element connected to the metal layer,
14 so as to form a self bias circuit.

1 17. (Original) An RF passive circuit comprising:
2 a semiconductor substrate;
3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;
5 a dielectric layer which is formed on an inside wall of the via-hole; and
6 a wiring metal layer formed on the dielectric layer, which holds a static capacity
7 between the via-hole.

1 18. (Original) The RF passive circuit of Claim 17, further comprising:
2 a resistance element whose one terminal is electrically connected to the metal film
3 of the via-hole, and the other terminal to the wiring metal layer.

1 19. (Original) An RF amplifier comprising:
2 a semiconductor substrate;
3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;
5 a dielectric layer which is formed on an inside wall of the via-hole;
6 a wiring metal layer formed on the dielectric layer, which holds a static capacity
7 between the via-hole; and
8 a field effective transistor, mounted the semiconductor substrate, which has a
9 common gate circuit having a gate terminal electrically connected to the wiring metal layer.

1 20. (Original) An RF amplifier comprising:

2 a semiconductor substrate;

3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;

5 a dielectric layer which is formed on an inside wall of the via-hole;

6 a wiring metal layer formed on the dielectric layer, which holds a static capacity
7 between the via-hole; and

8 a bipolar transistor, mounted on the semiconductor substrate, which has a
9 common base circuit having a base terminal electrically connected to the wiring metal layer.

1 21. (Original) An RF amplifier comprising:

2 a semiconductor substrate;

3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;

5 a dielectric layer which is formed on an inside wall of the via-hole;

6 a wiring metal layer formed on the dielectric layer, which holds a static capacity
7 between the via-hole;

8 a resistance element whose one terminal is electrically connected to the metal film
9 of the via-hole and the other terminal to the metal layer; and

10 a field effective transistor mounted the semiconductor substrate whose source
11 terminal is connected to the other terminal of the resistance element connected to the metal layer,
12 so as to form a self bias circuit.

1 22. (Original) An RF passive circuit comprising:

2 a semiconductor substrate;

3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;

5 a first dielectric layer which is formed on an inside wall of the via-hole;

6 a first wiring metal layer formed on the first dielectric layer which equivalently
7 forms a first capacity element between the via-hole;

8 a second dielectric layer which is formed on the first wiring metal layer; and

9 a second wiring metal layer formed on the second dielectric layer which
10 equivalently forms a second capacity element between the first wiring metal layer,

11 wherein the via-hole and the second wiring metal layer are electrically connected,
12 and the sum of static capacity of the first capacity element and the second capacity element are
13 held between the via-hole and the first wiring metal layer.

1 23. (Original) The RF passive circuit of Claim 22, further comprising:

2 a resistance element whose terminal is electrically connected either to the second
3 wiring metal layer or to the via-hole, and the other terminal to the first wiring metal layer.

1 24. (Original) An RF amplifier comprising:

2 a semiconductor substrate;

3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;

5 a first dielectric layer which is formed on an inside wall of the via-hole;

6 a first wiring metal layer formed on the first dielectric layer which equivalently
7 forms a first capacity element between the via-hole;

8 a second dielectric layer which is formed on the first wiring metal layer;

9 a second wiring metal layer formed on the second dielectric layer which
10 equivalently forms a second capacity element between the first wiring metal layer,

11 the via-hole and the second wiring metal layer being electrically connected, and
12 the sum of static capacity of the first capacity element and the second capacity element being
13 held between the via-hole and the first wiring metal layer; and

14 a field effective transistor, mounted on the semiconductor substrate, which has a
15 common gate circuit having a gate terminal electrically connected to the first wiring metal layer.

1 25. (Original) An RF amplifier comprising:

2 a semiconductor substrate;

3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 through the semiconductor substrate;

5 a first dielectric layer which is formed on an inside wall of the via-hole;

6 a first wiring metal layer formed on the first dielectric layer which equivalently
7 forms a first capacity element between the via-hole;

8 a second dielectric layer which is formed on the first wiring metal layer;

9 a second wiring metal layer formed on the second dielectric layer which
10 equivalently forms a second capacity element between the first wiring metal layer,

11 the via-hole and the second wiring metal layer being electrically connected, and
12 the sum of static capacity of the first capacity element and the second capacity element being
13 held between the via-hole and the first wiring metal layer; and
14 a bipolar transistor, mounted on the semiconductor substrate, which has a
15 common base circuit having a base terminal electrically connected to the first wiring metal layer.

1 26. (Original) An RF amplifier comprising:
2 a semiconductor substrate;
3 a via-hole which is formed by applying a metal film on an inside wall of a hole
4 provided through the semiconductor substrate;
5 a first dielectric layer which is formed on an inside wall of the via-hole;
6 a first wiring metal layer formed on the first dielectric layer which equivalently
7 forms a first capacity element between the via-hole;
8 a second dielectric layer which is formed on the first wiring metal layer;
9 a second wiring metal layer formed on the second dielectric layer which
10 equivalently forms a second capacity element between the first wiring metal layer,
11 the via-hole and the second wiring metal layer being electrically connected, and
12 the sum of static capacity of the first capacity element and the second capacity element being
13 held between the via-hole and the first wiring metal layer;
14 a resistance element whose one terminal is electrically connected either to the
15 second wiring metal layer or to the via-hole, and the other terminal to the first wiring metal layer;
16 and

17 a field effective transistor mounted on the semiconductor substrate whose source
18 terminal is connected to the one terminal of the resistance element connected either to the second
19 wiring metal layer or to the via-hole, so as to form a self bias circuit.

1 27. (New) The RF passive circuit of Claim 10 wherein the inductor is connected to
2 an input matching parallel capacitor having a first terminal on one side of the dielectric layer and
3 a second terminal on the other side of the dielectric layer.

1 28. (New) The RF passive circuit of Claim 27 herein the first and second terminals
2 contain gold.

1 29. (New) The RF passive circuit of Claim 28 wherein the dielectric layer has a
2 permittivity of at least 100.

1 30. (New) The RF passive circuit of Claim 28 wherein the inductor contains gold.